



Region 10 Nutrient Reduction Strategy



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Sources of Nutrient Pollution

- **Urban Stormwater**
 - 80% of U.S. Population on 10% of Land
 - 50% of Urban Areas Will be Redeveloped by 2030
 - 30% of Additional Needed Housing Stock Not Yet Built
 - Expected to Grow Dramatically With Increased Urbanization
- **Municipal Wastewater Treatment**
 - Among Most Heavily Regulated Sectors
 - Treat over 18 million tons of human solids annually
 - About 4% with numeric limits for N and 10% for P
- **Air Deposition of Nitrogen**
 - Approx 20% of Nitrogen Loadings in Chesapeake and Gulf

Sources of Nutrient Pollution

- **Livestock Production Activities**
 - 1 billion tons of manure annually
 - Substantial portion not currently covered by CAFO rule
- **Agricultural Row Crops**
 - Inefficient fertilizer utilization – about 30% of applied N is lost?
 - Stormwater runoff and irrigation return flows exempt under CWA with highly variable controls at State levels

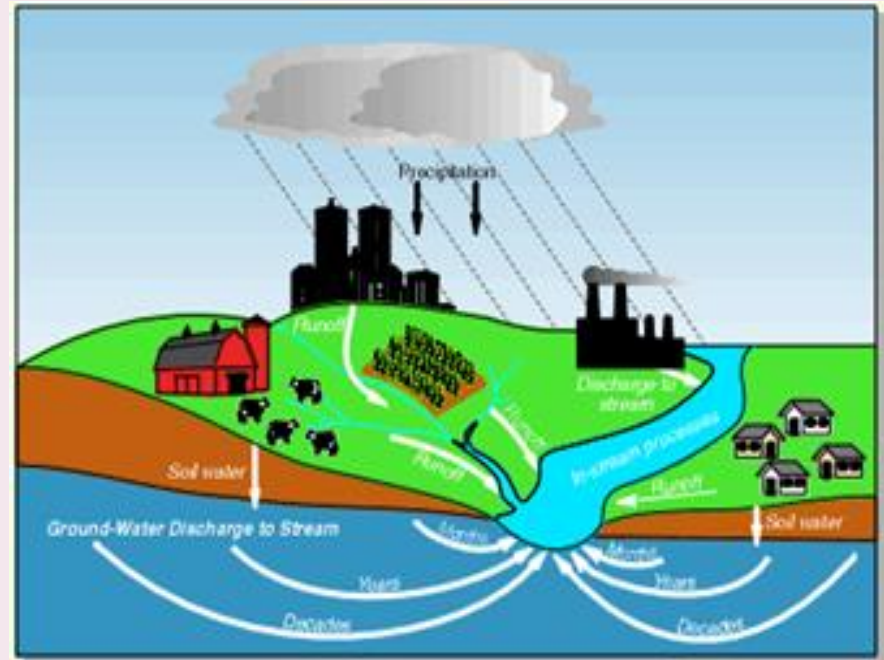
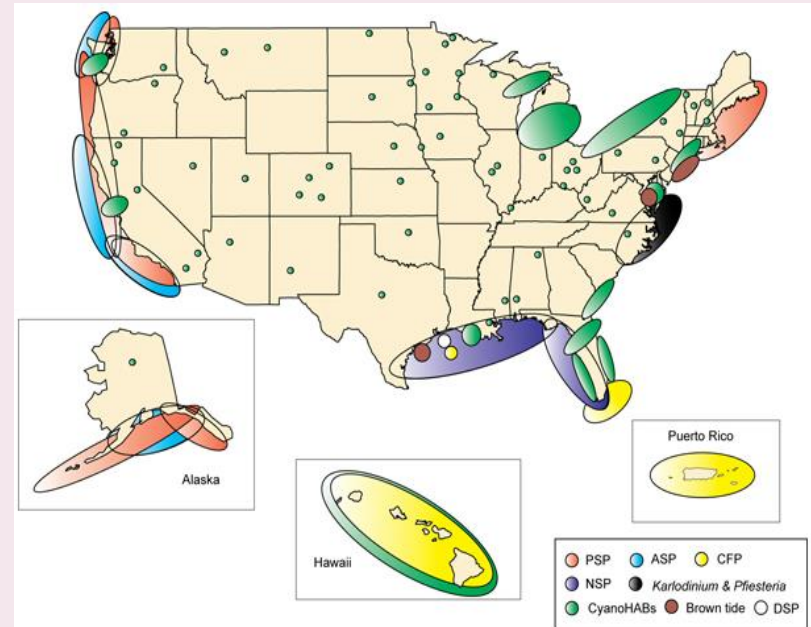


Figure 2. Nutrient movement in the ground-water-flow system.

Extent of N & P Impacts

- Rivers and streams
 - Over 47% of streams have medium to high levels of phosphorus and over 53% have medium to high levels of nitrogen
- Lakes and reservoirs
 - 2.5 million acres impaired
- Coastal and estuarine
 - 300 hypoxic zones in U.S. waters and not just on the coasts



Nutrients are National Priority

- Nutrients are national water quality issue - 14,000 US streams in 49 states w/ nutrient related problems.
 - Public health impacts to drinking water when nitrates/nitrites are present
 - Significant cost to drinking waters systems for treatment
 - Significant factor in algal blooms—including HABs
 - Major recreational and aquatic life impacts
- March 10 EPA HQ Memo – Federal/State Partnership to Reduce Nutrients – recommended Framework to achieve Nutrient Reduction – USDA is partner w/EPA
- Dec 13, 2011 - USDA Revises National Nutrient Management Standard to Achieve Maximum Agricultural, Environmental Benefits

EPA Work Efforts

- Aug 2009 Report of State-EPA Nutrient Innovation Task Group
- National Nutrient Criteria Implementation Workgroup
- NPDES Permit Writers Guidance
- March 2011 Nutrient Framework
- Nitrogen and Phosphorus Pollution Data Access Tool
http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/npdat_index.cfm
- Coming Soon! Active, CWA 319 Nutrient Reduction Projects
- Agricultural Certainty Framework
- Farm, Ranch, and Rural Communities Federal Advisory Committee (Karma)
- Lots going on – federal and state partnerships emerging

Nutrient Innovations Task Group Findings

- Knowledge, Collaboration, and Incentives Will Fail Absent Joint Accountability
- Current Tools Underused and Poorly Coordinated
- Additional Tools Rarely Used
- Current Regs Disproportionately Address Certain Sources in Watershed to the Exclusion of Others
- Specific Aspects of State Nonpoint Source Programs Highly Successful, But Broader Application Undercut by Absence of a Common Multi-State Framework of Mandatory Point and Nonpoint Source Accountability Within and Across Watersheds

March 2011 - EPA Office of Water

Recommended Framework

- Prioritize watersheds for N & P loading reductions
- Set watershed load reduction goals based on best available information
- Ensure effective point source permits in priority sub-watersheds
- Highlight success, innovation in agricultural areas
- Use stormwater and septic systems (LID)
- Accountability and Verification
- Annual Public Reporting - load reductions & environmental impacts
- Numeric Criteria (*where appropriate*)

EPA Region 10 Nutrient Strategy

- Region 10 developing Nutrient Reduction Strategy – point and nonpoint sources - OR, WA & ID
 - Focused on highlighting successes; providing information and technology transfer to share successes
 - Asking States and Federal agencies to collaborate to better leverage financial and technical resources
 - Better interpretation of narrative criteria – instead of focus on numeric criteria
 - Improved monitoring
 - Better use 303(d) reporting and TMDLs to assess and reduce nutrients

Regional Nutrient Reduction Success Stories

ID Point Source Successes

Setting Goals for Nutrient Reduction

- **Plummer, ID** – on Couer d'Alene Reservation – *50ppb – using a blue water filtration system*
- **Couer d'Alene, Post Falls, and Hayden** – *50ppb for total P as an average over a nine month period*
- **Sorrento, Nampa ID Cheese Factory** – *70ppb on a maximum monthly average*

Regional Nutrient Reduction Success Stories

WA Point Source Success

- **Lake Whatcom DO TMDL** - assigned a waste load allocation for developed area as P surrogate – model will allow water quality response to different land use scenarios.

<http://www.ecy.wa.gov/programs/wq/tmdl/LkWhatcom/LkWhatcomTMDL.html>

- **Spokane River NPDES Permits** – using available technology to meet some of the lowest P limits in the US
- **Clark's Creek TMDL /Puyallup Watershed** - EPA, Puyallup Tribe of Indians, and WA Ecology, focused on sediment, excess plant growth, stormwater flows, and low dissolved oxygen.
 - stormwater BMPs, monitoring, and numeric targets for NPDES stormwater general permit – green infrastructure

Regional Nutrient Reduction Success Stories

OR Point Source Successes

- **Clean Water Services' Durham Advanced Wastewater Treatment Facility** - tertiary treatment to remove P & ammonia using biological nutrient methods, alum and lime, followed by filtration - first facility in the United States to recover fertilizer as a natural byproduct of wastewater treatment.

<http://www.cleanwaterservices.org/AboutUs/WastewaterAndStormwater/Ostara.aspx>

- **Bear Creek** – collaborative process to upgrade Ashland WWTP and implement agricultural and urban best management practices – P has dropped steadily over time

http://water.epa.gov/polwaste/nps/success319/or_bear.cfm

Other Nutrient Reduction Successes

- **EPA RARE project funded in Yakima Basin** to assess floodplain connectivity – nutrient reduction – partners include City of Yakima WWTP and South Central WA RC&D
- **LID/Green Infrastructure**
 - Portland
 - Puyallup, WA, one of EPA's Ten Cities - Green Infrastructure Strategy
- **OR Harmful Bloom Algal Strategy – 2011**
- **USGS Sparrow Model** to assist N&P reductions

Regional Nutrient Reduction Success Stories

Non Point Successes

- OR Dept of Agriculture – River Point Farms, Hermiston, OR - Lisa Hanson
- ID DEQ – Dixie Drain/Boise River – Toni Hardesty
- WA SCC – Mark Clarke - Jefferson County Conservation District
- 3 Director Talks – Collaboration Success

Next Steps on Nutrient Strategy

- Continued identification of successes through outreach and conversations
- Dialogue with states to identify opportunities for EPA and states to collaborate on using existing tools and technical assistance to move towards nutrient reduction
- Discuss improvements within current criteria framework